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Features of the Air Defense of Troops in a Front Offensive Operation on the Northwestern Strategic Axis

by

General-Mayor of Artillery A. Kudrin

The Northwestern Strategic Axis in the European Theater of Military Operations occupies a unique position. Within its limits pass the shortest routes by which U.S. strategic aviation based on the North American Continent can carry out strikes against the important industrial-economic areas of the European part of the Soviet Union.

The sea area adjoining the Northwestern Axis affords broad opportunities for the use of carrier-based aviation and missile-carrying submarines to conduct strikes against targets and groupings of armed forces in the coastal area and in the depth of the theater of military operations.

The airfield network of the capitalist countries contiguous to us on this axis is relatively well developed and, with respect to its capacity, greatly exceeds the needs of their national air forces. By using this network the probable enemies can create a large aviation grouping for direct actions against our troops operating on this axis.

All of this gives evidence of the fact that, in the overall complex of armed combat on this axis, a very important position will be assigned to air defense, the effectiveness of which will have a significant influence on the success of combat actions on the land, at sea and in the air. In this connection, the front troops participating in an offensive operation must be reliably protected against enemy strikes from the air both during preparations for the operation as well as during the operation.

The fulfilment of this requirement under the given conditions has certain features which are chiefly the result of the unique nature of the geographic position and natural conditions of the Northwestern Axis. The troops will have to operate over a vast territory, in difficult terrain, on separated axes, and in the absence of a continuous front.

In this article we will attempt to describe, on the basis of experience gained in the operational training of troops of the Leningrad Military District, those specific problems which must be dealt with in organizing and carrying out air defense for the troops of a front.

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Radar reconnaissance of the air enemy. In order to ensure the timely detection of an air enemy and provide information on him to the command posts and active air defense means, there must be a continuous radar field in the limits of the entire operational disposition of the troops of the front. At the least, the first line of radar companies must be able to detect targets at low and extremely low altitudes with a sufficient degree of reliability. However, this requirement cannot be met in a number of cases because of the specific nature of this theater. Therefore, the main efforts of the radiotechnical units must be concentrated on individual operational axes. A continuous radar field will be formed only on the axes on which the main groupings of troops are operating. There will be a great deal of unscanned space between these fields, particularly in the lower range of frequencies, which the enemy can use to reach the protected troops and targets from the direction of their flanks and rear. This leads to the necessity of building up the grouping of radiotechnical means on the open flanks. For this same reason it will be necessary to allocate, as much as possible, the radar means of the surface-to-air missile and antiaircraft artillery units (subunits) for reconnaissance of the air enemy.

Radar reconnaissance aircraft (helicopters) may be used to monitor the airspace in those areas where it is impossible to deploy ground radars. There is an acute need for such means.

There are great difficulties involved in the selection of siting areas for radar companies. In many cases radar companies must deploy in positions which do not afford circular scanning of the airspace. This leads to a shortening of the intervals between adjacent radar subunits by 20 to 40 percent in comparison with operating at normal positions; and it requires more frequent movement of the companies behind the advancing forces and an additional expenditure of radiotechnical means.

The experience of a number of exercises and war games has shown that twice as many radar companies are required to create a continuous radar field on the axes of advance of main troop groupings in comparison with the number assigned in a front and in armies. Therefore, plans must be made in advance to reinforce the air defense troops of a front with an additional number of radiotechnical units. 50X1-HUM

The operation of radar subunits at positions that do not fully meet the requirements placed on them sharply influences the accuracy with which the flight altitudes of targets are measured by radars using the goniometric method of height-finding. Therefore, each radar company should be supplied with a height-finding radar which will increase the accuracy of

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altitude measurements and, at the same time, increase the operating depth and the immunity to jamming of the reconnaissance system as a whole.

We believe that, for the conditions of the Northwestern Strategic Axis, we should abandon the system, which is presently used by the air defense troops of the ground forces, of structuring a radar field by lines, and move to a system consisting of radar centers and low-altitude radar posts which are tied in with them. First of all, this would increase the reliability of detecting low-flying targets; secondly, it would speed up the reporting of air targets to the active air defense means and eliminate the redundant flow of messages; and, thirdly, it would improve control both over the individual elements of the radar system and over the entire system as a whole.

In addition to these advantages, the need for changing to a system of radar centers is created by the specific nature of the terrain, where some radar sets frequently cannot provide circular surveillance of the airspace because of the ruggedness of the terrain and their limited ability to maneuver. Within a system of radar centers it would be possible to arrange the sectors of responsibility for observation in such a way as to ensure circular surveillance of the air enemy. Two radar centers would be needed to maintain continuity of the radar field in an army zone.

Radar centers equipped with different types of radars could be used when needed, as posts for guiding fighter aviation to air targets and fighter-bomber aviation to ground targets.

Surface-to-air missile and antiaircraft artillery coverage of troops. When an offensive operation is conducted over a broad front and on widely separated axes, it is not possible to provide cover for troops and rear area installations over the entire area not only of the front but also of armies. This will require a great number of surface-to-air missile means. Therefore, zonal air defense must be established in order to cover the main troop groupings of an army on the main axes, and direct cover (point cover) should be organized using organic air defense means on the remaining axes (with some reinforcement in certain situations).

Since it is impossible to create a reliable zone of destruction for surface-to-air missiles over the entire area in which the troops are operating, the role of direct cover provided by tube antiaircraft artillery and antiaircraft machineguns with great fire power will increase substantially. This pertains first of all to the cover for amphibious landings on lakes, for units (subunits) operating away from the main

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forces, and for important small installations in the rear area of the troops.

Enemy aviation, using gaps in the radar field, can make surprise attacks against troops and targets from unscanned directions at low altitudes. It is extremely difficult to combat such aircraft with ground-based air defense means, and particularly surface-to-air missile systems. Most often the basic means of combating air targets at low altitudes (less than 1,000 meters) under these conditions will be tube antiaircraft artillery.

The necessity for the broad use of tube antiaircraft artillery can be explained by a number of other factors. In difficult swampy and wooded terrain it is impossible in a majority of cases to select positions for missile guidance stations that will satisfy the requirements placed upon them, which leads to a sharp decrease in missile guidance capabilities, particularly against low-flying targets. As a result, surface-to-air missile systems become very vulnerable to air strikes and must be protected against enemy air actions. The advantage of tube antiaircraft artillery in this respect is that it can conduct fire using gun-laying radar, as well as visually using fire control instruments or automatic gunsights. For these reasons antiaircraft artillery fire is less affected by jamming. The ZSU-23-4 antiaircraft gun, which has great fire power and is capable of firing on the move, is a very promising air defense means for combating air targets at low altitudes under the conditions of this theater.

Another important advantage of antiaircraft artillery is its ability not only to provide cover for subunits against air strikes, but also to provide fire support when necessary for the destruction of enemy ground means.

Fighter aviation cover. In connection with the fact that surface-to-air missiles will not be able to cover large areas where the combat operations of front troops are taking place, a greater role will be played by fighter aviation in the air defense system. In a number of cases it will be the chief means of covering such areas. The use of the high maneuverability properties of fighter aircraft makes it possible to concentrate their efforts for combating airborne landings, as well as to repulse massive air strikes against installations in the rear of a front and army which are inadequately protected by ground-based air defense means. This will require the carefully thought-out and well-planned basing of aviation, as well as the distribution of control and guidance posts of fighter aircraft against air targets. As was noted earlier, an essential

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role may be played by radar centers used as auxiliary control and guidance posts. Conditions for the maneuvering of fighter aviation must be created before the start of an offensive operation.

In the course of combat operations the main efforts of the troops will be redirected from some axes to others as they complete their combat missions; as a rule, the distance between the axes will exceed the tactical operating radius of the fighter aircraft. It will of course be necessary to redeploy aviation rapidly to new airfields, or to support the operations of fighters at full radius with landings at maneuver airfields. But here one will be faced with the need for the rapid organization of control of aviation which will be applicable to the changed situation. This is a very complicated problem. Judging by the results of exercises, the most acceptable method of solving it is to establish fighter aviation control posts in advance in the proposed basing areas by dispatching operations groups there with communications equipment and moving radar means of the radiotechnical units of the air defense of troops. This was done in one exercise, for example, when plans were made for several fighter aviation regiments from a formation of the Air Defense of the Country to operate from forward airfields in order to reinforce the fighter air cover of the troops on the main axis. Auxiliary posts were created to control the fighters, while radar support was provided the fighters by the radiotechnical means of the air defense of troops.

Airborne relay stations for commands assume great importance when fighter aircraft are operating over their full range.

Organization of the control of air defense forces and means. It should be assumed that the air defense of a broad territory occupied by the troops of a front should be established first of all according to the principle of local groupings to cover the formations and large units operating on the main axes. There may be four or five such axes in a front zone up to 1,200 kilometers wide. As yet it is impossible to provide centralized control over air defense forces and means on a front this large from the front air defense command post.

The results of exercises have shown that under such conditions it is best to subordinate individual air defense units providing cover for troop groupings to the combined-arms armies or large units operating on the given axis, and to centralize all control over them at these levels. In this connection, it is recommended that the combined-arms armies and army corps have their own air defense command posts with the necessary technical means and personnel. This would facilitate the passage of data on the air

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situation and on the actions of air defense troops, improve the control of surface-to-air missile units, and ensure their reliable cooperation with fighter aviation. In an extreme case the command posts of air defense radiotechnical battalions could be used as the control organ for the air defense forces and means in an army and an army corps, but it would still be necessary to reinforce them with the appropriate specialists, communications means, and technical equipment.

The organization of communications also has certain characteristics. Frequent ionospheric disturbances and electromagnetic storms characteristic of the polar and near-polar regions disrupt shortwave communications and can lead to a loss of control over units. More powerful radio sets (than now authorized) and highly sensitive radio receivers are needed, especially in the polar regions, to maintain stable communications even over relatively short distances. In all cases shortwave radio communications must be backed up by other means to ensure continuity and a high reliability of communications.

We would like to express some of our thoughts on the use of the Air Defense Forces of the Country to provide cover for the troops of a front. In view of the limited number of air defense forces and means that a front has for the creation of reliable air defense of troops during an offensive operation, in all our exercises we made plans to bring in some of the border formations of the Air Defense Forces of the Country as reinforcement for the air defense of troops. At first glance this decision might seem justifiable. But one must also take into consideration the negative consequences.

The border formations of the Air Defense of the Country, in covering targets within the boundaries assigned to them, deploy their forces and means in a definite system which ensures effective combat against an air enemy. The removal from this system of some of its forces and means to reinforce the air defense of front troops will unavoidably weaken it, which is inadmissible in principle, since this not only reduces its effectiveness in covering the boundaries of a formation but also facilitates a breakthrough by enemy strategic aviation into the interior of the country.

One should also consider that it is extremely difficult to organize control over forces that have been attached. In one exercise, for example, the air defense troops of a front were reinforced by 16 independent radiotechnical companies of the border formations of the Air Defense Forces of the Country. The capacity of the plotting equipment of the radiotechnical units of the front and armies, as well as the amount of

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their organic communications equipment, made it impossible to organize the reception of data from these companies and to control their combat performance. Furthermore, large units and units of the Air Defense Forces of the Country do not have command posts suited to field conditions, which hinders their forward movement at the rate of advance of the troops.

Of course this does not mean that the troop grouping of an air defense border (frontline) formation will remain constant. Unquestionably its limits of responsibility will change as the troops of a front move forward, but these changes will be aimed first of all at improving the air defense system of the country. An expansion of the limits of responsibility will frequently be carried out for the purpose of moving the lines of interception of air targets as far as possible away from the installations being covered, affording more space for the maneuvering and combat operations of fighter aviation. The limits of responsibility of formations of the Air Defense Forces of the Country will be moved without radically breaking the system by which the border areas are covered on limited scales dependent upon the combat capabilities of the formations. Therefore, we fully share the opinion of those generals and officers who believe that it is necessary to form reserves of air defense troops to fill the gaps created between the air defense system of a front and the border formations of the Air Defense Forces of the Country.

In conclusion, we should note that the interests of the air defense of troops in an offensive operation urgently require a more improved table of organization and equipment for the air defense of troops, applicable to the conditions of the Northwestern Strategic Axis. In our view, the most advantageous way of solving this problem would be the creation of air defense large units equipped and organized with consideration for the peculiarities of this geographic area. Such large units, in comparison with the existing organizational structure, would have the following advantages: first, they would provide more reliable control over the entire front air defense system as well as each individual grouping of air defense means; second, within an air defense large unit deployed in the zone of combat operations of a combined-arms army (army corps) or in the territory of the rear area of a front, they would permit centralized tactical control of all active air defense means and ensure the precise cooperation of surface-to-air missile units with fighter aviation; third, they would eliminate intermediate levels in the passage of air situation data and, consequently, would substantially reduce delays and increase the credibility of the information; and fourth, they would significantly simplify questions of the automation and mechanization of processes for collecting and transmitting data on the air situation and the tactical

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control of active means.

All air defense means of large units should have a cross-country capability and be transportable by aircraft and helicopter.

The composition of air defense large units could be modified depending upon the specific conditions of the combat actions of the troops, but in principle it should include only ground-based air defense means.

Air defense large units deployed within the boundaries of combined-arms armies should be subordinate to the armies, while those that cover the rear area of a front should be subordinate directly to the chief of air defense troops of the front.

In our opinion, all of these measures would increase the effectiveness of air defense to a significant degree and maintain it at a sufficiently high level throughout an entire offensive operation.

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